

10/23/02 Substantive Changes approved by the full Commission
2/7/01 Substantive Change approved by the full Commission
10/31/00 Non-substantive changes approved by Efficiency Committee
10/31/00 Adopted by the full Commission

PEAK LOAD REDUCTION PROGRAM

DEMAND RESPONSIVE HVAC AND LIGHTING BUILDING SYSTEMS GUIDELINES

1. Program Element Summary

The Overall Program Guidelines contain general information and procedures that apply to the entire program. Consult the Overall Program Guidelines in addition to this Program Element Guideline. This Program Element will encourage the installation of “Demand Responsive” software and hardware in buildings. These systems must provide the building operators or scheduling coordinators with the capability to reduce power requirements of heating, ventilation, and air conditioning (HVAC) and/or lighting systems in response to signals from the Independent System Operator (ISO) or a central dispatch. The Program Element goal is to achieve 50 MW of peak electricity demand savings by installing new demand responsiveness systems in a combination of residential and commercial buildings throughout the state of California. A separate funding pool will be set aside for projects that can achieve peak reductions in the San Francisco and San Diego areas because of the preference given in PRC section 25555(a)(1)(A) in anticipation of potential reliability problems.

2. Amount Allocated for Subject Area

\$ 10 million is initially allocated for the Program Element. The funding level may increase or decrease. The funds will be spent using the following types of funding methods. The Commission may choose one or more of these methods in funding this Program Element.

- A. Grants to building owners to install Demand Responsive systems in commercial buildings.
- B. Contracts for the following: installation of Demand Responsive building systems in commercial buildings; installation of Demand Responsive building systems in residential dwellings; and installation of the basic metering hardware to allow building owners to monitor and record peak savings from system operation.

Note: up to \$1 million may be set aside to fund projects to install metering, hardware, and software. The equipment will monitor peak load savings from pre-defined load control or shedding strategies, and allow building owners to monitor their loads.

- C. Interagency agreements with state agencies and universities to install Demand Responsive building systems and /or metering hardware.

Funds will be set aside for projects that automatically control significant loads in the warmer regions of San Diego and San Francisco.

3. Schedule

Awards are ongoing.

4. Definitions

- A. Demand Responsive building systems—A control system that will incrementally adjust or curtail the electricity consumption of pre-defined HVAC and/or lighting systems in response to a signal sent from central dispatch or an aggregator. These systems may also include over ride switches that allow customers to opt out or override specific demand reduction strategies.
- B. Peak Electricity Demand Savings — Peak electricity demand savings are calculated as the average hourly reduction in demand during a summer afternoon when California system electrical demand is very high. The summer afternoon period is defined as the hours of 2 p.m. to 6 p.m., on non-holiday weekdays during the months of June through September. This four hour average value will be used as a proxy for demand savings during individual hours of ISO Alerts and/or high system demand. For more details, refer to the definition in the Overall Guidelines.
- C. Peak Outdoor Design Temperature—The highest or peak temperature conditions expected at a given building site over a long time period which are typically used in combination with assumptions about building internal loads to design and size the air conditioning system to provide comfort to building occupants during the hottest summer days.
- D. Pilot test—A system test of the Demand Responsive building systems which includes an estimate of the actual peak electricity demand savings achieved by comparing the average actual kW demand for the building (or buildings) for the five previous days with similar temperature conditions between 2 p.m. and 6 p.m. and the actual kW demand for the building during operation of the Demand Responsive building system. The test may also include transmitting this data to the Independent System Operator and/or an aggregator.
- E. Verified peak electricity demand savings —The actual or measured peak electricity demand savings measured during a test of the installed system over at least a six hour period from system start to finish. This result may need to be

normalized or adjusted from the raw pilot test result (in kW) for comparison to the temperature conditions specified in the estimate of peak electricity demand savings in the application.

5. Eligible Applicants

- A. **For grants**—The Commission may award grants to commercial building owners and property management organizations that serve commercial buildings.
- B. **For contracts**—The Commission may sign contracts with engineering, software, consulting or construction firms, publicly-owned utilities, or energy management system manufacturers.
- C. **Interagency Agreements**—The Commission may sign interagency agreements with the Department of General Services, the University of California or California State University system to facilitate the installation of these Demand Responsive building systems and or monitoring capabilities for existing shedding or control systems in state or university buildings.

6. Eligible Projects

- A. **For grants**—The Commission plans to offer grants to reimburse commercial building owners or property management organizations serving commercial buildings for the costs of installing, testing and operating Demand Responsive building systems during peak design temperature conditions. Priority consideration will be given to applications that request \$250 or less per KW of estimated peak electricity demand savings. Applications requesting more than \$250/kw will be considered if AB970 funds are available. The Commission may withhold for consideration proposals requesting more than \$250 per KW pending a determination of whether proposals requesting \$250 per KW or less will fully subscribe the available funds and or additional funds become available. These funds may also be used to fund the installation of interval meters below current meter quality requirements if the Commission decides this is consistent with the need to provide feedback to customers on system operation and potential peak electricity demand savings. The Demand Responsive building system may include an option for an override switch or other method to override the dispatch signal.
- B. **For contracts**—Project funding will be available for the costs of recruiting customers, installing Demand Responsive building system control equipment, testing and installing the communications devices, verifying the load reductions in a pilot test and to pay for necessary improvements in lighting system controls. Contractors accept the risk of finding buildings compatible with the installation of Demand Responsive building systems, convincing the owners to install Demand Responsive building system, testing the systems, and delivering the capability to deliver a fixed amount of MW reduction for a fixed price. Priority consideration

will be given to contract teams that request \$250 or less per kW of estimated peak electricity demand savings. Potential contractors who request more than \$250/kW will be considered if funds are still available and the potential contractor makes a compelling case that the system is likely to be cost effective in the long term for society and to the building owners. Contractors must offer customers the option of installing an override switch or some method of overriding the dispatch signal. Contract funding may also be used to monitor, or estimate using a sampling approach, the load reductions achieved by the dispatch signal at the distribution level, aggregate load reductions for use at the scheduling level, and fund the operating costs of these systems at the scheduling coordinator level.

- C. **For interagency agreements**—Project funding may be made available for installing and testing software and metering hardware capable of monitoring the peak savings achieved by different types of control strategies, and to directly support the installation and testing of Demand Responsive building systems in State and university buildings.

7. Type and Method of Funding

- A. **For grants**—The Commission may release a grant solicitation. Grant applications will be screened for minimum eligibility requirements. Eligible applications will then be evaluated and scored using selection evaluation criteria to determine if they meet the minimum qualifying points, as specified in the grant solicitation. Grants will be awarded on a first come, first serve basis to applicants receiving at least the minimum qualifying points. The minimum grant level eligible for project funding is \$250,000 or projected savings for a building or group of buildings of at least 1 MW. The Commission may also accept applications on a non-competitive basis.
- B. **For contracts**—The Commission may enter into non-competitive contracts.
- C. **For interagency agreements**—The Commission may negotiate interagency agreements with the agencies that manage and control State and university buildings.

8. Criteria

- A. For grants to building owners or property management organizations—applications will be evaluated and scored based on the following criteria:
 - 1. Probability that the Demand Responsive building system installation will be completed by the completion date anticipated in the proposal.
 - 2. Probability that the installation will actually achieve the estimated peak electricity demand savings within some reasonable confidence band.

3. Probability that actual project costs will not exceed the estimated project costs.

B. Non-competitive contracts will be executed based on the following criteria:

1. Estimated cost per MW of peak electricity demand savings defined as total contract costs divided by the estimated peak electricity demand savings.
2. Proposed plans to test the Demand Responsive building systems and verify peak electricity demand savings across the building or buildings.
3. Previous experience in installing energy management control and Demand Responsive building systems and achieving peak electricity demand reductions.
4. Previous experience in recruiting customers and meeting installation deadlines.
5. Previous experience in installing and managing load management/shedding systems.
6. Proposed location of the buildings to be equipped with Demand Responsive building systems or basic metering hardware and software.
7. Ability to complete the work and achieve the estimated peak electricity demand savings reduction by the completion date estimated in the proposal.
8. Cost to the state is reasonable and contract is in the best interest of State.

C. For interagency agreements—The proposed statement of work within an interagency agreement will be evaluated based on the following criteria:

1. Ability to complete the work and achieve the estimated peak load reduction by the completion date anticipated in the proposal.
2. Estimated cost to complete the work.

9. Application Process

Eligible commercial building owners or associations interested in receiving funding shall apply to the Commission by responding to a solicitation. The Committee will also consider non-competitive proposals, following funding of proposals received in response to solicitations. The minimum information required from each applicant will include, but not be limited to:

- a plan to install and test building control system by the completion date estimated in the application , and measure the level of peak electricity demand savings achieved through pre-specified load control strategies during peak summer temperature conditions;
- the estimated total cost of installing and testing the Demand Responsive building system and the requested amount of grant funding from the Commission not to exceed the equivalent of \$250/kW of peak electricity demand savings ;
- the schedule for project installation, testing and completion;
- an estimate from a registered engineer of the peak electricity demand savings resulting from the operation of the Demand Responsive building system; and
- location of the commercial building and evidence demonstrating site control and a commitment to install and use the system.

The Commission encourages the applicant to aggregate individual projects into a combined application, wherever possible. For grants, the project must benefit the recipient directly.

10. Approval of Awards

The Committee will make recommendations for all contract, grant, and interagency agreement awards. The Commission may approve the awards at a Commission business meeting. In addition, contracts over \$75,000 must be approved by the Department of General Services.

11. Award Payments and Invoicing

- A. For grants: Costs for installation, operation, and testing of the Demand Responsive building system and the installation of hardware to provide feedback to building operators on system performance will be reimbursed up to a pre-specified amount of \$250 per estimated kW reduction. Fifty percent of the total grant amount will be paid upon receipt of invoices for the costs to install and test the Demand Responsive systems. The balance of the funds will be paid upon completion of the pilot test of system operation and receipt of a report the level of the peak electricity demand savings. The grant agreement will contain project milestones. Failure to meet any milestone may result in termination of the award by the Commission as indicated in the Overall Program Guidelines.
- B. For contracts or interagency agreements: Payments will be based on the completion of scheduled task(s) or time and materials in the work statement. Tasks may include but are not limited to recruiting a given number of customers or a given level of load relief, installing the systems, testing of the dispatch signal

and any metering displays for feedback to building owners, and pilot testing buildings or groups of buildings. Payments will be made based on the costs and materials. Clauses for failure to recruit the contracted amount of customers and/or kW will be part of the contract.

12. Reports and Documentation

All recipients will be required to keep records of how frequently the Demand Responsive building systems were used and whether the load reductions were achieved by manual adjustments to building controls or automatically in response to “emergency” or price signals sent by a third party